Title: Point of purchase education for growers and gardeners on disease resistant vegetable transplants

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Abstract:
Sales of vegetable transplants have been increasing in the last few years as more people try home gardening. This creates a need for education so that new gardeners will have a positive experience, and an opportunity to provide information that helps new gardeners use IPM in their gardens. While information on disease resistant vegetable varieties is available, not all home gardeners know where to find it and not all producer/retailers use it a factor in choosing the transplant varieties to sell. This project has two objectives: 1) to encourage producer/retailers to grow and market disease resistant vegetable varieties for home gardeners, and 2) to encourage home gardeners to choose resistant vegetable varieties for a successful gardening experience.

An initial survey of growers found that, while disease resistance is considered in choice of variety, it is less important than local adaptation and previous popularity of a variety. Only a third of growers felt confident in using disease resistance to market vegetable transplants but 82% of growers would be more likely to do it if marketing materials were available.

Based on this information, we designed and distributed posters, bookmarks and brochures as point of purchase materials to promote the use of disease resistant vegetable varieties by home gardeners, explain what disease resistance is, and promote the Cornell Vegetable Varieties for Gardeners website as a source of information on which varieties have resistance.

Background and justification:
In Spring 2008, home gardeners purchased more vegetable transplants than they have in the past. New York State's Southern Tier Growers' Association and the Mohawk Valley Growers report that it was difficult to keep up with demand for vegetable transplants (personal communications). The Garden Writers Association 2008 Early Spring Gardening Trends Research Report shows this NYS observed trend is widespread. Their national survey reveals that purchases of vegetable and fruit plants moved from 4th in 2007 to 2nd in 2008 on the list of priorities for spring garden related spending. In another national online survey conducted Sept. 15-17, 2008, by Insight Express for PARADE, more than 80% of those surveyed say sticker shock at the grocery store has meant changing their habits. Some 21% of those surveyed are now growing some of their own vegetables.

With new home gardeners coming into the market, there is a need for education. Skill and knowledge development grounded in research-based information is critical to success. A positive gardening experience will maximize the benefits of gardening. One facet of this education is the appropriate methods for pest management in home gardens. Use of resistant varieties is recognized as a cornerstone of IPM and there are a number of varieties resistant to common

diseases in popular garden vegetables like tomatoes, peppers, and cucurbits. Their use in the home garden will reduce the need for pesticides and increase the chance for a successful gardening experience.

Information on disease resistant varieties for home garden use exists on the Cornell Gardening Resources and Vegetable MD On-line websites (www.gardening.cornell.edu, vegetablemdonline.ppath.cornell.edu) and home gardeners are increasingly using the internet to find plant or product information (GWA 2008 survey – up 4% from 2007). However, a Minnesota survey reports that nearly 25% of the gardeners they surveyed frequently obtained garden or plant related information from a garden center or nursery and nearly 50% did sometimes (Meyer and Foord, 2008).

There are 130 growers with $100,000 + in total sales that produce vegetable transplants in NYS (2007 USDA Floriculture Summary). This does not include the large number of smaller operations that combine production with retail. In addition to providing information to home gardeners, these producer/retailers determine which vegetable variety transplants are for sale. Encouraging the use of resistant varieties is merely frustrating if those varieties are not available to the home gardener. And while seed of resistant varieties may be available, there is an increasing market for transplants because of their convenience and more rapid production.

By providing internet-based and point of purchase education on disease resistant vegetable varieties through the producer/retailers there is benefit to both gardeners and producer/retailers. Home gardeners will be exposed to resistant varieties as a method of IPM and are likely to have a more positive gardening experience. Producers will have additional marketing tools for their vegetable transplants and may encourage repeat purchases by providing useful information to home gardeners.

Objectives:

We have two objectives:

1) to encourage producer/retailers to produce and market disease resistant vegetable varieties for home gardeners, and

2) to encourage home gardeners to grow resistant vegetable varieties for a successful gardening experience.

Interaction with producer/retailers will be through:

a) a survey on how they determine which vegetable varieties to grow or sell and whether disease resistance is or could be a marketing tool

b) creation and distribution of point of purchase materials promoting disease resistance in vegetable varieties

c) a follow up survey on their experience with the materials.

Interaction with home gardeners will be through the Cornell University Vegetable Varieties for Gardeners website:

a) the information on disease resistance in the website will be standardized and made more easily searchable

b) an online survey of which vegetable diseases are most common

c) an online survey of growers use and interest in growing disease resistant vegetable varieties

Procedures:

1) Update existing Cornell University Vegetable Varieties for Gardeners website to make information on resistant varieties easier to find and to add additional information from other sites, such as Cornell's Vegetable MD On-line.

We started with the vegetable crops most likely to be sold as transplants. Information on resistance came from the vegetablemdonline website maintained by the Cornell University Plant Pathology Department. This part of the project is still underway.

2) Initial survey of producer/retailers who currently sell vegetable transplants. The survey will include questions on how they currently determine which varieties to sell, their current practices in regard to marketing disease resistant varieties, and their willingness to sell resistant varieties and distribute the point of purchase education materials. The survey was delivered through the 2009 bedding plant schools held around the state in January and February, grower organization meetings and NYS Flower Industries. There were 186 respondents.

3) Initial survey of the registered users of the Vegetable Varieties for Gardeners website (http://vegvariety.cce.cornell.edu/) (4000 total, 1400 from NE IPM region, 900 from NYS). The survey will include questions on their current disease problems in home gardens, and availability and use of resistant vegetable varieties.

4) Create and distribute point of purchase educational materials to producer/retailers willing to participate (10-15), CCE Community Educators (60+ in NYS) and Master Gardener Volunteers

a) Posters in two sizes promoting the growing of disease resistant vegetable varieties

b) "Take home" bookmark describing how to find resistant variety information on Cornell's Vegetable Varieties for Gardeners website

c) A print on demand brochure that describes what disease resistance is

5) Survey producer/retailers who participated in the program. The survey will include questions on whether they used the materials in marketing or merely handed them out, if there was a perceived interest by home gardeners, and if they had increased sales in resistant vegetable transplants. This part of the project is still ongoing.

6) Evaluate home gardener reaction.

a) Number of hits on resistant variety information on website and any comments

b) Survey of NYS registered users of Vegetable Varieties for Gardeners website on whether the point of purchase materials were available to them and how, and whether they tried any resistant vegetable varieties and their comments.

This part of the project is still ongoing.

7) Report back to grower organizations on results of home gardener and producer/retailer experiences in order to determine interest in continuing/expanding production of point of purchase educational materials on disease resistant vegetable varieties.

Results and discussion:

1) Initial survey of producer/retailers who currently sell vegetable transplants.

The surveys were run at the Nursery/Bedding Plant Schools held in New Paltz, Latham, and Buffalo and at the Ag Forum in Long Island. Of the 186 respondents, 77% grow their own transplants and 72% sell them. Most retailers produce some of their own transplants and purchase others, and there are a few wholesale greenhouses that grow transplants for sale only to retailers.

Growers were asked how they determine which varieties to grow, with the options being customer requests, popularity in previous years, what's hot this year, whether they are easy to grow in the greenhouse, whether they are available when needed, whether they grow well in the region, or disease resistance. The crops included were lettuce, squash, peppers and tomatoes. Over all crops, disease resistance was ranked in the middle as a reason for choosing a variety. Adaptation to the region and previous popularity were the two most important reasons, although customer requests ranked highest for tomato. Disease resistance was most often listed for tomato – 60% of respondents said it was an important characteristic, compared to 49% for pepper, 37% for squash, and 30% for lettuce.

In relation to marketing disease resistance vegetable varieties, only 32% of respondents were confident enough in their understanding of disease resistance to use it as a marketing tool. Thirty-seven percent knew that Cornell had a website on vegetable varieties which included information on disease resistance. Eighty-two percent would be more likely to use disease resistance if marketing materials were available.

2) Create and distribute point of purchase educational materials

After discussions with some local greenhouse owners, we designed a poster with the help of Karen English. The poster was made in 2 sizes to accommodate posting on a wall or on a bench. There was space available on the poster to allow growers to attach lists of the disease resistant varieties they had for sale, as this would likely vary from greenhouse to greenhouse.

We also designed a bookmark to promote the Vegetable Varieties website as a place to learn about disease resistance. It includes the NYS IPM and Cornell logos and space to include a retailer's address label so it can also serve as a marketing item. It is intended to be available next to the cash register for patrons to pick up or to be included with purchases.

The brochure is available on the NYS IPM website to be printed by the retailer as needed. It explains what disease resistance is and lists the common diseases for which resistance exists by crop. Again, lists of varieties were not included, as they will vary by retailer. This brochure could be included in a retailer's gardening information display or placed by the cash register.

A large and a small poster, 100 bookmarks, instructions for printing the brochure, and a cover letter were mailed to the 42 growers who had indicated they would be willing to evaluate the

materials. Four other sets were delivered to growers in the Ithaca area. Bookmarks were also sent to all the CCE Community Horticulture and Commercial Horticulture educators. Several educators requested bookmarks to give to their Master Gardeners. They were also included in a 'salad' project by Cornell and distributed at several horticulture meetings.

As we approach the 2010 growing season all signs indicate that home gardening continues to increase in popularity and transplant sales should continue to increase. There is an education gap in the use of disease resistance as a marketing tool or a desirable characteristic for vegetable varieties. The number of available resistant varieties and the variability in what is available at any retail operation make creating a consistent marketing program difficult. However, the initial results suggest there is interest by retailers. Also, the impact of tomato late blight on home gardeners has vegetable transplant growers/retailers concerned that new gardeners will be discouraged by their lack of success. Point of purchase and educational materials on disease resistance may be of more value in Spring 2010 to help convince gardeners to try again.

In Fall 2009, we began discussions with IPM vegetable specialists, Curt Petzoldt and Abby Seaman towards expanding the breadth of the project and applying for a grant that would fund additional work.

Project location(s):
Producer/retailer surveys were done throughout NYS. The Vegetable Varieties for Gardeners website is used nationally with approximately 1400 members in the Northeast and 900 in NYS.

Samples of resources developed:
Attached as pdfs:
Brochure
Bookmark
Poster

Implications

Expected impacts (some longer term than period of grant):
1) For producer/retailers - Increased availability and purchase of transplants of resistant vegetable varieties for use in home gardens at NYS garden centers and evidence of resistance as a marketing factor

2) For home gardeners - Increased interest by home gardeners in growing resistant vegetable varieties, raised awareness of availability of these resistant vegetable varieties and evidence of successful production of resistant vegetable varieties

Some diseases for which you can buy disease resistant transplants

VEGETABLE	DISEASE
Broccoli	Downy mildew • Brown bead • Black rot
Cabbage	Black rot • Fusarium yellows • Bacterial speck
Cantaloupe and other melons	Downy mildew • Powdery mildew • Fusarium, races 0, 1, 2
Cucumber	Angular leaf spot • Anthracnose • Zucchini yellow mosaic virus • Cucumber mosaic virus • Papaya ringspot virus • Watermelon mosaic virus • Downy mildew • Powdery mildew • Scab
Eggplant	Tobacco mosaic virus • Verticillium wilt
Lettuce	Downy mildew • Lettuce mosaic virus
Pepper	Tobacco mosaic virus • Bacterial leaf spot, races 1, 2, 3, 5 • Potato virus Y • Cucumber mosaic virus • Pepper mottle virus • Tobacco etch virus
Squash (summer)	Powdery mildew • Zucchini yellow mosaic virus • Cucumber mosaic virus • Papaya ringspot virus • Watermelon mosaic virus
Squash (winter)	Powdery mildew
Tomato	Alternaria stem canker • Bacterial speck • Early blight • Fusarium, races 1, 2, 3 • Nematode • Stemphyllium • Gray leaf spot • Tobacco mosaic virus • Verticillium, races 1, 2 • Tomato spotted wilt virus
Watermelon	Anthracnose, races 1, 2 • Fusarium, races 0, 1, 2

This brochure available online at:

www.nysipm.cornell.edu/publications/dis_res_veg/files/dis_res_veg.pdf

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Disease Resistant Vegetables

Cornell University

New York State Integrated Pest Management Program

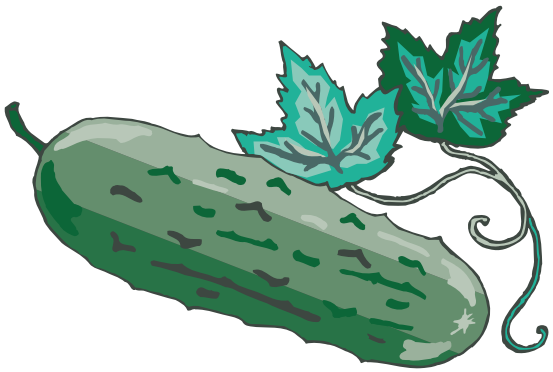
Choose disease resistant vegetable varieties for a healthy garden!

What is disease resistance?

Diseases resistance is a plant's genetic ability of a plant to prevent a pathogen from causing damage. All plants of the same variety are genetically identical so they are resistant to the same diseases. Growing disease resistant plants is the best way to reduce diseases in your vegetable garden and have a healthy harvest.

If a plant is free of diseases, does that mean it is disease resistant?

Not necessarily. In order for disease to develop, the pathogen needs to be present and the environment needs to be right. Under these conditions, a disease resistant variety will still look good and produce well while a susceptible variety will show symptoms of the disease. Even a disease resistant variety can get the disease if it is under other stresses, like drought, so you still need to water and feed them when necessary.



Are disease resistant varieties resistant to all diseases and insects?

Unfortunately not. A disease resistant variety might not even be resistant to all the races and strains of a single disease. However, plant breeders are working to develop varieties which are resistant to multiple fungal, bacterial and viral diseases. Insect resistance isn't common in garden vegetable varieties although some have resistance to nematodes.

How does disease resistance work?

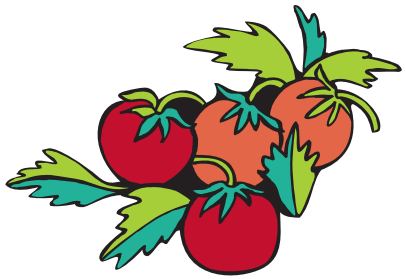
Natural selection has made some plants resistant to diseases. A plant's leaf surface may prevent the disease from growing, or the plant may be able to react to the infection to stop its spread. A plant breeder can combine the disease resistance with other traits like high yield, good flavor, and fruit size for a variety that makes your garden a success!

How do I know which disease resistant vegetable variety to buy?

If you know which diseases you usually get in your vegetable garden, look for a variety with resistance to one or more of those diseases. If you aren't sure which diseases you have, or you are starting a garden for the first time, try a variety with resistance to multiple diseases.

Where can I get more information on resistant vegetable varieties?

- Vegetable Varieties for Gardeners (http://vegvariety.cce.cornell.edu/) has lots of information on the best varieties to grow. Use the search feature and type in the disease name or simply type in "resistant" to find a list of appropriate varieties.
- Vegetable MD On-line (http://vegetablemdonline.ppath.cornell.edu/) has descriptions of diseases of vegetables and lots of pictures to help you identify what's making your plants sick. It also lists resistant varieties for each crop.
- Some seed catalogs add codes for disease resistance to their variety descriptions.
- Ask at your local garden center!



Learn about disease resistance at Vegetable Varieties for Gardeners website

vegvariety.cce.cornell.edu

More than 6000 variety descriptions and gardener reviews!

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